

# SAMSCO WASTESAVER™

## Industry's Standard To Recycle/Recover Process Wastewater

The SAMSCO WASTESAVER™ provides a solution to the problem of industrial wastewater.

- Reduces, even eliminates, industrial sewer discharge
- Slashes wastewater disposal cost
- Recovers high purity distillate
- Reclaims reusable process chemistry
- Reuses energy for maximum efficiency
- Accepts variable waste streams

Modules available up to 40 gpm (57,600 gpd) typically operate at \$0.02 - 0.05/gallon.

- Double effect design uses energy twice, resulting in operating costs which are half those of alternative designs

**Patented Pumpless Liquid Transfer System (EVAC™)** does not require feed, distillate, or concentrate pumps as do other distillation systems. This increases reliability while eliminating all problems associated with pumps, seals, impellers, and other mechanical liquid transfer components. This includes costly pump maintenance, pump replacement (and associated downtime), electrical hazards, and spare parts inventory.

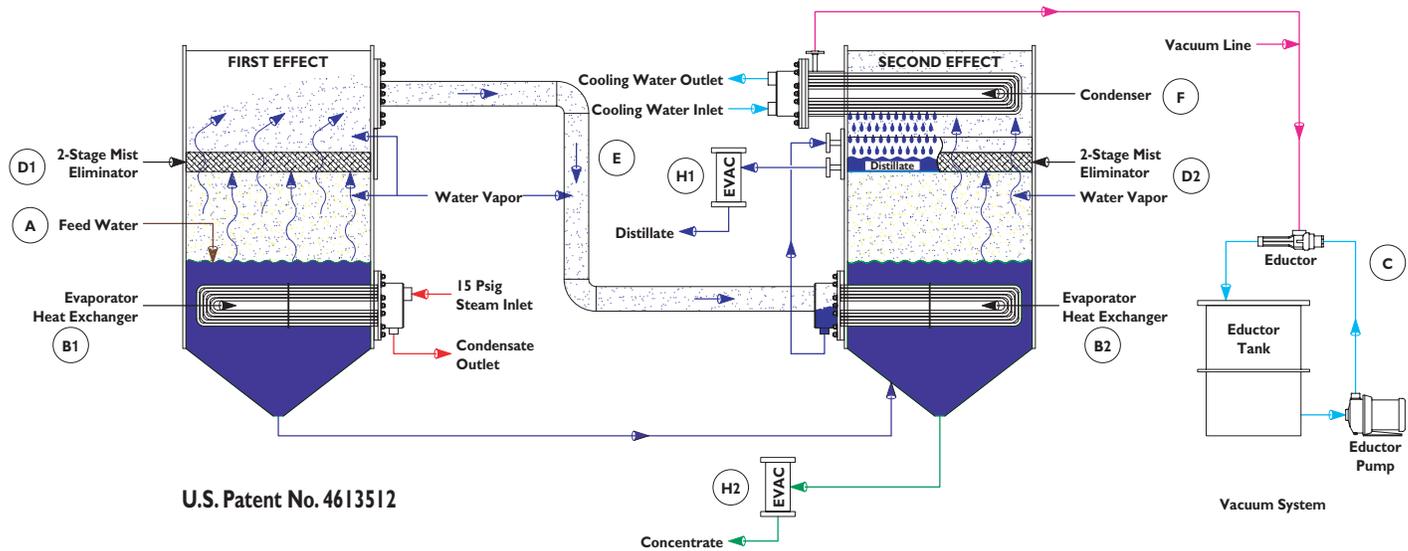
**Simple PLC Control System** is fully automatic and can be operated by employees without specialized training or certifications.

**2-Stage Mist Elimination System** is provided in each upper process chamber to prevent water droplets, occasionally entrained in the vapor, from leaving the chamber and contaminating the distillate.

**Distillate Quality Monitoring System**, continuously controlled by a PLC, ensures that only high quality water is returned for use. A conductivity meter monitors distillate output and automatically diverts unacceptable distillate for reprocessing.

**Skidded Package Design** minimizes consumption of valuable floor space and the low height fits comfortably inside most industrial facilities. Because plumbing and wiring are done at the factory, installation is quick, easy, and relatively inexpensive.





## Principles of Operation

The SAMSICO **WasteSaver™** provides an efficient means to separate the water from a wastewater stream, resulting in a concentrate that is typically reduced 90-99% in volume.

The SAMSICO **WasteSaver™** utilizes an advanced technology based on the physical principal that, with sufficient heat and reduced pressure (vacuum), water will boil at a temperature below 212° F. Because of this lowered boiling temperature, the removal of water from a waste stream may occur without degrading process chemistry. As a result, the re-concentrated chemistry often can be reused (or is easily discarded).

- Dilute chemical/water waste streams (feed water) are drawn (A) by vacuum into the lower portion of the first effect process vessel.
- Once this vessel is filled, the feed water is heated to a temperature of 140° to 160° F (60° to 71° C) by an elevated, tubular heat exchanger (B1) that is submerged in the feed water. Fifteen (15) PSIG steam is used as the heat source.

- An off-line Eductor Recirculation System (C) creates a vacuum of -27 to -28" Hg in the second effect process vessel, which is transferred, via connecting piping, into the first effect vessel. The combination of heat and vacuum causes the water in both vessels to vaporize at low temperatures.
- Water vapor in the first effect rises and passes through the 2-Stage Mist Eliminator (D1). This removes entrained water droplets from the vapor stream and allows only vapor (gas) to pass into the upper section of the process vessel.
- This vapor is drawn (again under the influence of the Eductor-generated vacuum) out of Effect #1 (E) and enters Effect #2—at the bottom (evaporation) chamber of the Second Effect structure.
- Partially concentrated wastewater is drawn, periodically, from Effect #1 Evaporator chamber into Effect #2 Evaporator chamber. Here the semi-concentrated residue is boiled again using the recovered heat from Effect #1 as the energy in Effect #2 heat exchanger (B2). Here, the boil occurs at 90° to 110° F due to the greater vacuum.

- Once again, the vapor is de-misted (D2) and passes into the Effect #2 Condenser stage (F).
- The condensing section consists of a tubular heat exchanger and a distillate collection trough. When steam vapor contacts the condensing heat exchanger, it changes from steam (water vapor) into clean distilled water.
- The recovered water is continuously collected in the trough and removed via the EVAC™ **Pumpless** Liquid Transfer System (H1). A distillate quality monitoring system ensures that only low conductivity distillate is passed as acceptable. The concentrated residual chemistry that remains in the liquid state in the Stage #2 evaporator chamber is removed periodically from the lower portion of the process vessel via the EVAC™ **Pumpless** Liquid Transfer System (H2).



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